

May 12, 2016

Meagan E. Ormand
Golder Associates Inc.
2108 W. Laburnum Ave.
Suite 200
Richmond, VA 23227

RE: Project: BREMO WEEKLY PROCESS
Pace Project No.: 92297123

Dear Meagan Ormand:

Enclosed are the analytical results for sample(s) received by the laboratory on May 11, 2016. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Nicole Gasiorowski
nicole.gasiorowski@pacelabs.com
Project Manager

Enclosures

cc: Ron DiFrancesco, Golder Associates Inc.
Martha Smith, Golder Associates Inc.
Mike Williams, Golder Associates Inc



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: BREMO WEEKLY PROCESS
Pace Project No.: 92297123

Ormond Beach Certification IDs

8 East Tower Circle, Ormond Beach, FL 32174
Alabama Certification #: 41320
Connecticut Certification #: PH-0216
Delaware Certification: FL NELAC Reciprocity
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maryland Certification: #346
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity
Missouri Certification #: 236
Montana Certification #: Cert 0074

Nebraska Certification: NE-OS-28-14
Nevada Certification: FL NELAC Reciprocity
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
North Dakota Certification #: R-216
Oklahoma Certification #: D9947
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
South Carolina Certification: #96042001
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165
Wyoming Certification: FL NELAC Reciprocity
West Virginia Certification #: 9962C
Wisconsin Certification #: 399079670
Wyoming (EPA Region 8): FL NELAC Reciprocity

Charlotte Certification IDs

9800 Kinsey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12

South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
Virginia/VELAP Certification #: 460222

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92297123

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92297123001	T2-160511-0930-S3	EPA 1664B	JMS	1	PASI-C
		EPA 200.7	CKJ	1	PASI-O
		Trivalent Chromium Calculation	CKJ	1	PASI-O
		EPA 200.8	CKJ	10	PASI-O
		EPA 245.1	ANB	1	PASI-A
		SM 2540D	MJP	1	PASI-A
		EPA 218.7	AEM	1	PASI-O
		EPA 350.1	AES2	1	PASI-A
		SM 4500-CI-E	AES2	1	PASI-A
		92297123002	T1-160511-1130-S3	EPA 1664B	JMS
EPA 200.7	CKJ			1	PASI-O
Trivalent Chromium Calculation	CKJ			1	PASI-O
EPA 200.8	CKJ			10	PASI-O
EPA 245.1	ANB			1	PASI-A
SM 2540D	MJP			1	PASI-A
EPA 218.7	AEM			1	PASI-O
EPA 350.1	AES2			1	PASI-A
SM 4500-CI-E	AES2			1	PASI-A

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BREMO WEEKLY PROCESS
Pace Project No.: 92297123

Method: EPA 1664B
Description: HEM, Oil and Grease
Client: Golder_Dominion_Bremo
Date: May 12, 2016

General Information:

2 samples were analyzed for EPA 1664B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92297123

Method: EPA 200.7

Description: 200.7 MET ICP

Client: Golder_Dominion_Bremo

Date: May 12, 2016

General Information:

2 samples were analyzed for EPA 200.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.7 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92297123

Method: Trivalent Chromium Calculation

Description: Trivalent Chromium Calculation

Client: Golder_Dominion_Bremo

Date: May 12, 2016

General Information:

2 samples were analyzed for Trivalent Chromium Calculation. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BREMO WEEKLY PROCESS
Pace Project No.: 92297123

Method: EPA 200.8
Description: 200.8 MET ICPMS
Client: Golder_Dominion_Bremo
Date: May 12, 2016

General Information:

2 samples were analyzed for EPA 200.8. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 200.8 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BREMO WEEKLY PROCESS
Pace Project No.: 92297123

Method: EPA 245.1
Description: 245.1 Mercury
Client: Golder_Dominion_Bremo
Date: May 12, 2016

General Information:

2 samples were analyzed for EPA 245.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 245.1 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BREMO WEEKLY PROCESS
Pace Project No.: 92297123

Method: SM 2540D
Description: 2540D TSS, Low-Level
Client: Golder_Dominion_Bremo
Date: May 12, 2016

General Information:

2 samples were analyzed for SM 2540D. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BREMO WEEKLY PROCESS
Pace Project No.: 92297123

Method: EPA 218.7
Description: Hexavalent Chromium by IC
Client: Golder_Dominion_Bremo
Date: May 12, 2016

General Information:

2 samples were analyzed for EPA 218.7. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

QC Batch: WETA/57739

CC: The continuing calibration for this compound is outside of method control limits. The result is estimated.

- T1-160511-1130-S3 (Lab ID: 92297123002)
 - Chromium, Hexavalent
- T2-160511-0930-S3 (Lab ID: 92297123001)
 - Chromium, Hexavalent

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

QC Batch: WETA/57739

L0: Analyte recovery in the laboratory control sample (LCS) was outside QC limits.

- LCS (Lab ID: 1571288)
 - Chromium, Hexavalent

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/57739

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92297121001

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MS (Lab ID: 1571289)
 - Chromium, Hexavalent
- MSD (Lab ID: 1571290)
 - Chromium, Hexavalent

Additional Comments:

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PROJECT NARRATIVE

Project: BREMO WEEKLY PROCESS
Pace Project No.: 92297123

Method: EPA 350.1
Description: 350.1 Ammonia
Client: Golder_Dominion_Bremo
Date: May 12, 2016

General Information:

2 samples were analyzed for EPA 350.1. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: BREMO WEEKLY PROCESS
Pace Project No.: 92297123

Method: SM 4500-CI-E
Description: 4500 Chloride
Client: Golder_Dominion_Bremo
Date: May 12, 2016

General Information:

2 samples were analyzed for SM 4500-CI-E. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: BREMO WEEKLY PROCESS
Pace Project No.: 92297123

Sample: T2-160511-0930-S3		Lab ID: 92297123001		Collected: 05/11/16 09:30		Received: 05/11/16 12:48		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
Field Data									
Analytical Method:									
Collected By	M. ORMAND			1		05/11/16 09:35			
Collected Date	05/11/16			1		05/11/16 09:35			
Collected Time	09:30			1		05/11/16 09:35			
Field pH	8.1	Std. Units	0.10	1		05/11/16 09:35			
HEM, Oil and Grease									
Analytical Method: EPA 1664B									
Oil and Grease	ND	mg/L	5.0	1		05/12/16 07:24			
200.7 MET ICP									
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Tot Hardness asCaCO3 (SM 2340B)	91800	ug/L	3300	1	05/12/16 12:50	05/12/16 16:38			
Trivalent Chromium Calculation									
Analytical Method: Trivalent Chromium Calculation									
Chromium, Trivalent	ND	ug/L	5.0	1		05/12/16 17:10	16065-83-1		
200.8 MET ICPMS									
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony	5.0	ug/L	5.0	1	05/12/16 12:50	05/12/16 16:15	7440-36-0		
Arsenic	31.4	ug/L	5.0	1	05/12/16 12:50	05/12/16 16:15	7440-38-2		
Cadmium	ND	ug/L	1.0	1	05/12/16 12:50	05/12/16 16:15	7440-43-9		
Copper	ND	ug/L	5.0	1	05/12/16 12:50	05/12/16 16:15	7440-50-8		
Lead	ND	ug/L	5.0	1	05/12/16 12:50	05/12/16 16:15	7439-92-1		
Nickel	ND	ug/L	5.0	1	05/12/16 12:50	05/12/16 16:15	7440-02-0		
Selenium	ND	ug/L	5.0	1	05/12/16 12:50	05/12/16 16:15	7782-49-2		
Silver	ND	ug/L	0.40	1	05/12/16 12:50	05/12/16 16:15	7440-22-4		
Thallium	ND	ug/L	1.0	1	05/12/16 12:50	05/12/16 16:15	7440-28-0		
Zinc	ND	ug/L	25.0	1	05/12/16 12:50	05/12/16 16:15	7440-66-6		
245.1 Mercury									
Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.10	1	05/12/16 10:30	05/12/16 13:25	7439-97-6		
2540D TSS, Low-Level									
Analytical Method: SM 2540D									
Total Suspended Solids	1.4	mg/L	1.0	1		05/12/16 10:36			
Hexavalent Chromium by IC									
Analytical Method: EPA 218.7									
Chromium, Hexavalent	ND	ug/L	3.0	3		05/12/16 14:39	18540-29-9	CC,L1	
350.1 Ammonia									
Analytical Method: EPA 350.1									
Nitrogen, Ammonia	ND	mg/L	0.20	1		05/12/16 13:31	7664-41-7		
4500 Chloride									
Analytical Method: SM 4500-Cl-E									
Chloride	26.2	mg/L	5.0	1		05/12/16 12:03	16887-00-6		

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ANALYTICAL RESULTS

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92297123

Sample: T1-160511-1130-S3		Lab ID: 92297123002		Collected: 05/11/16 11:30		Received: 05/11/16 12:48		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
Field Data									
Analytical Method:									
Collected By	M. ORMAND			1		05/11/16 11:35			
Collected Date	05/11/16			1		05/11/16 11:35			
Collected Time	11:30			1		05/11/16 11:35			
Field pH	8.0	Std. Units	0.10	1		05/11/16 11:35			
HEM, Oil and Grease									
Analytical Method: EPA 1664B									
Oil and Grease	ND	mg/L	5.0	1		05/12/16 07:24			
200.7 MET ICP									
Analytical Method: EPA 200.7 Preparation Method: EPA 200.7									
Tot Hardness asCaCO3 (SM 2340B)	88900	ug/L	3300	1	05/12/16 12:50	05/12/16 16:42			
Trivalent Chromium Calculation									
Analytical Method: Trivalent Chromium Calculation									
Chromium, Trivalent	ND	ug/L	5.0	1		05/12/16 17:10	16065-83-1		
200.8 MET ICPMS									
Analytical Method: EPA 200.8 Preparation Method: EPA 200.8									
Antimony	6.3	ug/L	5.0	1	05/12/16 12:50	05/12/16 16:17	7440-36-0		
Arsenic	40.7	ug/L	5.0	1	05/12/16 12:50	05/12/16 16:17	7440-38-2		
Cadmium	ND	ug/L	1.0	1	05/12/16 12:50	05/12/16 16:17	7440-43-9		
Copper	ND	ug/L	5.0	1	05/12/16 12:50	05/12/16 16:17	7440-50-8		
Lead	ND	ug/L	5.0	1	05/12/16 12:50	05/12/16 16:17	7439-92-1		
Nickel	ND	ug/L	5.0	1	05/12/16 12:50	05/12/16 16:17	7440-02-0		
Selenium	ND	ug/L	5.0	1	05/12/16 12:50	05/12/16 16:17	7782-49-2		
Silver	ND	ug/L	0.40	1	05/12/16 12:50	05/12/16 16:17	7440-22-4		
Thallium	ND	ug/L	1.0	1	05/12/16 12:50	05/12/16 16:17	7440-28-0		
Zinc	ND	ug/L	25.0	1	05/12/16 12:50	05/12/16 16:17	7440-66-6		
245.1 Mercury									
Analytical Method: EPA 245.1 Preparation Method: EPA 245.1									
Mercury	ND	ug/L	0.10	1	05/12/16 10:30	05/12/16 13:28	7439-97-6		
2540D TSS, Low-Level									
Analytical Method: SM 2540D									
Total Suspended Solids	3.9	mg/L	1.0	1		05/12/16 10:36			
Hexavalent Chromium by IC									
Analytical Method: EPA 218.7									
Chromium, Hexavalent	ND	ug/L	3.0	3		05/12/16 14:52	18540-29-9	CC,L1	
350.1 Ammonia									
Analytical Method: EPA 350.1									
Nitrogen, Ammonia	ND	mg/L	0.20	1		05/12/16 13:33	7664-41-7		
4500 Chloride									
Analytical Method: SM 4500-Cl-E									
Chloride	18.3	mg/L	5.0	1		05/12/16 12:07	16887-00-6		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92297123

QC Batch: GCSV/24945 Analysis Method: EPA 1664B
 QC Batch Method: EPA 1664B Analysis Description: 1664 HEM, Oil and Grease
 Associated Lab Samples: 92297123001, 92297123002

METHOD BLANK: 1731628 Matrix: Water

Associated Lab Samples: 92297123001, 92297123002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Oil and Grease	mg/L	ND	5.0	05/12/16 07:20	

LABORATORY CONTROL SAMPLE: 1731629

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Oil and Grease	mg/L	40	35.1	88	78-114	

MATRIX SPIKE SAMPLE: 1731630

Parameter	Units	92296835001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Oil and Grease	mg/L	ND	40	35.7	89	78-114	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92297123

QC Batch: MERP/9409

Analysis Method: EPA 245.1

QC Batch Method: EPA 245.1

Analysis Description: 245.1 Mercury

Associated Lab Samples: 92297123001, 92297123002

METHOD BLANK: 1731792

Matrix: Water

Associated Lab Samples: 92297123001, 92297123002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	05/12/16 13:06	

LABORATORY CONTROL SAMPLE: 1731793

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.4	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1731794 1731795

Parameter	Units	92297073001		MSD		MS		MSD		% Rec Limits	RPD	Qual
		Result	MS Spike Conc.	Spike Conc.	MS Result	MSD Result	% Rec	% Rec				
Mercury	ug/L	ND	2.5	2.5	2.4	2.3	95	92	70-130	3		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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QUALITY CONTROL DATA

Project: BREMO WEEKLY PROCESS
Pace Project No.: 92297123

QC Batch: MPRP/30365 Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 Analysis Description: 200.7 MET
Associated Lab Samples: 92297123001, 92297123002

METHOD BLANK: 1570774 Matrix: Water
Associated Lab Samples: 92297123001, 92297123002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Tot Hardness asCaCO3 (SM 2340B)	ug/L	ND	3300	05/12/16 16:14	

LABORATORY CONTROL SAMPLE: 1570775

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tot Hardness asCaCO3 (SM 2340B)	ug/L	82700	82100	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1570776 1570777

Parameter	Units	92297073001		MSD		MS		MSD		% Rec Limits	RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec			
Tot Hardness asCaCO3 (SM 2340B)	ug/L	102 mg/L	82700	82700	174000	175000	87	89	70-130	1		

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: BREMO WEEKLY PROCESS
Pace Project No.: 92297123

QC Batch: MPRP/30366 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: 200.8 MET
Associated Lab Samples: 92297123001, 92297123002

METHOD BLANK: 1570778 Matrix: Water
Associated Lab Samples: 92297123001, 92297123002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	5.0	05/12/16 16:01	
Arsenic	ug/L	ND	5.0	05/12/16 16:01	
Cadmium	ug/L	ND	1.0	05/12/16 16:01	
Copper	ug/L	ND	5.0	05/12/16 16:01	
Lead	ug/L	ND	5.0	05/12/16 16:01	
Nickel	ug/L	ND	5.0	05/12/16 16:01	
Selenium	ug/L	ND	5.0	05/12/16 16:01	
Silver	ug/L	ND	0.40	05/12/16 16:01	
Thallium	ug/L	ND	1.0	05/12/16 16:01	
Zinc	ug/L	ND	25.0	05/12/16 16:01	

LABORATORY CONTROL SAMPLE: 1570779

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	50	50.5	101	85-115	
Arsenic	ug/L	50	51.3	103	85-115	
Cadmium	ug/L	5	5.3	107	85-115	
Copper	ug/L	50	55.5	111	85-115	
Lead	ug/L	50	50.2	100	85-115	
Nickel	ug/L	50	52.8	106	85-115	
Selenium	ug/L	50	54.3	109	85-115	
Silver	ug/L	5	5.4	108	85-115	
Thallium	ug/L	50	50.6	101	85-115	
Zinc	ug/L	250	282	113	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1570780 1570781

Parameter	92297121001		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
	Units	Result	Conc.	Conc.	Result	Result	% Rec	% Rec			
Antimony	ug/L	6.0	50	50	56.5	56.6	101	101	70-130	0	
Arsenic	ug/L	6.6	50	50	57.7	58.0	102	103	70-130	1	
Cadmium	ug/L	ND	5	5	5.1	5.1	101	101	70-130	0	
Copper	ug/L	ND	50	50	54.0	53.2	107	105	70-130	1	
Lead	ug/L	ND	50	50	51.6	51.7	103	103	70-130	0	
Nickel	ug/L	ND	50	50	54.3	54.3	104	103	70-130	0	
Selenium	ug/L	ND	50	50	55.7	55.0	107	106	70-130	1	
Silver	ug/L	ND	5	5	5.1	5.2	103	105	70-130	2	
Thallium	ug/L	ND	50	50	52.4	52.3	104	104	70-130	0	

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QUALITY CONTROL DATA

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92297123

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1570780												1570781	
Parameter	Units	92297121001 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	% Rec	Limits	RPD	Qual
			Spike	Spike		Result		Result					
			Conc.	Conc.	Result	Result	% Rec	% Rec					
Zinc	ug/L	ND	250	250	266	267	105	105	70-130		0		

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QUALITY CONTROL DATA

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92297123

QC Batch: WET/44865

Analysis Method: SM 2540D

QC Batch Method: SM 2540D

Analysis Description: 2540D Total Suspended Solids

Associated Lab Samples: 92297123001, 92297123002

METHOD BLANK: 1731796

Matrix: Water

Associated Lab Samples: 92297123001, 92297123002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	ND	1.0	05/12/16 10:34	

LABORATORY CONTROL SAMPLE: 1731798

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	250	256	102	90-110	

SAMPLE DUPLICATE: 1731799

Parameter	Units	92297073001 Result	Dup Result	RPD	Qualifiers
Total Suspended Solids	mg/L	ND	ND		

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QUALITY CONTROL DATA

Project: BREMO WEEKLY PROCESS
Pace Project No.: 92297123

QC Batch: WETA/57739 Analysis Method: EPA 218.7
QC Batch Method: EPA 218.7 Analysis Description: Chromium, Hexavalent IC
Associated Lab Samples: 92297123001, 92297123002

METHOD BLANK: 1571287 Matrix: Water
Associated Lab Samples: 92297123001, 92297123002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium, Hexavalent	ug/L	ND	1.0	05/12/16 12:30	

LABORATORY CONTROL SAMPLE: 1571288

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium, Hexavalent	ug/L	.075	.088J	117	85-115 L0	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1571289 1571290

Parameter	Units	92297121001		MS		MSD		MS		MSD		% Rec Limits	RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Chromium, Hexavalent	ug/L	ND		.075	.075	.62J	.64J	262	295	85-115	4	M0		

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QUALITY CONTROL DATA

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92297123

QC Batch: WETA/27581 Analysis Method: EPA 350.1
 QC Batch Method: EPA 350.1 Analysis Description: 350.1 Ammonia
 Associated Lab Samples: 92297123001, 92297123002

METHOD BLANK: 1732186 Matrix: Water

Associated Lab Samples: 92297123001, 92297123002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.20	05/12/16 13:20	

LABORATORY CONTROL SAMPLE: 1732187

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.0	101	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1732188 1732189

Parameter	Units	92296986001		MSD		MS		MSD		% Rec Limits	RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec			
Nitrogen, Ammonia	mg/L	ND	5	5	5.0	5.0	99	99	90-110	0		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1732190 1732191

Parameter	Units	92297158002		MSD		MS		MSD		% Rec Limits	RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec			
Nitrogen, Ammonia	mg/L	ND	5	5	5.1	5.1	103	102	90-110	0		

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QUALITY CONTROL DATA

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92297123

QC Batch: WETA/27578

Analysis Method: SM 4500-Cl-E

QC Batch Method: SM 4500-Cl-E

Analysis Description: 4500 Chloride

Associated Lab Samples: 92297123001, 92297123002

METHOD BLANK: 1731920

Matrix: Water

Associated Lab Samples: 92297123001, 92297123002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	5.0	05/12/16 11:54	

LABORATORY CONTROL SAMPLE: 1731921

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.3	107	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1731922 1731923

Parameter	Units	92296986001		MS		MSD		MS		MSD		% Rec		RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits					
Chloride	mg/L	48.2	10	10	57.5	57.4	93	92	90-110	0					

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QUALIFIERS

Project: BREMO WEEKLY PROCESS
Pace Project No.: 92297123

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above adjusted reporting limit.
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
MDL - Adjusted Method Detection Limit.
PQL - Practical Quantitation Limit.
RL - Reporting Limit.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Indicates the compound was analyzed for, but not detected.
Acid preservation may not be appropriate for 2 Chloroethylvinyl ether, Styrene, and Vinyl chloride.
A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

LABORATORIES

PASI-A Pace Analytical Services - Asheville
PASI-C Pace Analytical Services - Charlotte
PASI-O Pace Analytical Services - Ormond Beach

ANALYTE QUALIFIERS

CC The continuing calibration for this compound is outside of method control limits. The result is estimated.
L0 Analyte recovery in the laboratory control sample (LCS) was outside QC limits.
L1 Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.
M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: BREMO WEEKLY PROCESS

Pace Project No.: 92297123

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92297123001	T2-160511-0930-S3		FLD/		
92297123002	T1-160511-1130-S3		FLD/		
92297123001	T2-160511-0930-S3	EPA 1664B	GCSV/24945		
92297123002	T1-160511-1130-S3	EPA 1664B	GCSV/24945		
92297123001	T2-160511-0930-S3	EPA 200.7	MPRP/30365	EPA 200.7	ICP/18145
92297123002	T1-160511-1130-S3	EPA 200.7	MPRP/30365	EPA 200.7	ICP/18145
92297123001	T2-160511-0930-S3	Trivalent Chromium Calculation	ICP/18146		
92297123002	T1-160511-1130-S3	Trivalent Chromium Calculation	ICP/18146		
92297123001	T2-160511-0930-S3	EPA 200.8	MPRP/30366	EPA 200.8	ICPM/12279
92297123002	T1-160511-1130-S3	EPA 200.8	MPRP/30366	EPA 200.8	ICPM/12279
92297123001	T2-160511-0930-S3	EPA 245.1	MERP/9409	EPA 245.1	MERC/9045
92297123002	T1-160511-1130-S3	EPA 245.1	MERP/9409	EPA 245.1	MERC/9045
92297123001	T2-160511-0930-S3	SM 2540D	WET/44865		
92297123002	T1-160511-1130-S3	SM 2540D	WET/44865		
92297123001	T2-160511-0930-S3	EPA 218.7	WETA/57739		
92297123002	T1-160511-1130-S3	EPA 218.7	WETA/57739		
92297123001	T2-160511-0930-S3	EPA 350.1	WETA/27581		
92297123002	T1-160511-1130-S3	EPA 350.1	WETA/27581		
92297123001	T2-160511-0930-S3	SM 4500-CI-E	WETA/27578		
92297123002	T1-160511-1130-S3	SM 4500-CI-E	WETA/27578		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt

Client Name:

Golden / Brema

Project #:

TZ/T1

WO# : 92297123



Courier:
 Commercial

Fed Ex UPS USPS Client
 Pace Other: _____

Custody Seal Present? Yes No
 Seals Intact? Yes No

Packing Material: Bubble Wrap Bubble Bags None Other: _____

Thermometer: RMD001 _____ Type of Ice: Wet Blue None

Correction Factor: 0.0°C Cooler Temp Corrected (°C): 3.2

Date/Initials Person Examining Contents: 5-11-16
RSB
 Samples on ice, cooling process has begun
 Biological Tissue Frozen? Yes No N/A

USDA Regulated Soil (N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?
 Yes No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

		COMMENTS:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name and/or Signature on COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72 hr)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered Volume Received for Dissolved Tests?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11. Note if sediment is visible in the dissolved container
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes Date/Time/ID/Analysis Matrix: <u>WW</u>		
All containers needing acid/base preservation have been checked?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO ₃ , H ₂ SO ₄ , HCl<2; NaOH >9 Sulfide, NaOH >12 Cyanide)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC,LLHg	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples checked for dechlorination	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>5-6mm)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager SCURF Review: NMG

Date: 5/11/16

Project Manager SRF Review: NMG

Date: 5/11/16

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers)

